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KIDNEY ABNORMALITIES TO LIVE PEOPLE WITH HIV AND RISK FACTORS ASSOCIATED IN BRAZZAVILLE

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ABSTRACT

HIV infection is considered a chronic systemic disease and can lead to many complications, including kidney disease. The purpose of this work is to determine the frequency of kidney abnormalities in patients living with HIV and the associated risk factors. ***Patients and Methods:*** *This was a cross-sectional, descriptive, multi-center study, conducted from July 1 to October 15, 2016 in the Department of Gastroenterology and Internal Medicine at the University Hospital of Brazzaville, the Infectious Diseases Department and Dermatology of the Talangai Reference Hospital, the 2 Specialized Care Centres for People Living with HIV at Talangai Reference Hospital and Brazzaville City Hospital. Included were all patients living with HIV over the age of 15, on antiretroviral therapy for at least 6 months, with regular clinical and biological follow-up. Study variables were: age, sex, leukocyteturia, hematuria, proteinuria, creatinemia, glomerular filtration flow, CD4 count. All patients benefited from urine analysis by the urinary strip, an assessment of kidney function by the serum dosage of creatinine, and the calculation of glomerular filtration flow by MDRD.* ***Results****: 304 patients were included, the frequency of renal abnormalities was 25%. The average age of patients with renal abnormality was 44 years-1.5 years with extremes ranging from 35 to 69 years. The sex ratio was 0.3. Among patients with renal abnormality, 13.49% had proteinuria; leukocyturia was present in 1.98% and hematuria in 0.99%. Kidney failure was present in 15.78% of patients. The number of CD4s below 200 cells/mm3 was correlated with renal abnormalities.* ***Conclusion****: This study shows a high frequency of renal abnormalities in patients living with HIV. A low number of CD4s was the associated risk factor. Early detection of kidney abnormalities is needed to prevent renal complications of HIV infection in people living with HIV.*

Keywords : kidney abnormalities, people living with HIV, Brazzaville.

INTRODUCTION

In 2017, UNAIDS estimated the number of people living with HIV worldwide at 36.9 million [1]. Sub-Saharan Africa remains the most affected region with 25.7 million people living with HIV (HIV) [1]. Hiv infection is considered a chronic systemic disease and can lead to many complications, including kidney damage. Since 2005, international companies (National Kidney Foundation) have recommended screening for kidney disease in all HIV-infected patients [2]. In the Republic of Congo, HIV prevalence is 3.2% among 15-49 year olds [3]. The objectives of this work are to determine the frequency of renal abnormalities, epidemiological characteristics and associated risk factors in PHAs, in order to contribute to the improvement of the management of PHAs in Congo.

MATERIALS AND METHOD

This was a multi-center descriptive cross-sectional study conducted in 3 sites: the Infectious Diseases and Dermatology Department of the Talangai Reference Hospital, the Gastroenterology and Internal Medicine Department of the Brazzaville University Hospital and in 2 specialized HIV management centres at Talangaï Reference Hospital and Brazzaville University Hospital. From July 1 to October 15, 2016, about 4 months, were included all people living with HIV, over the age of 15, followed regularly for at least 6 months, having a CD4 count available. The Multisix DUS 10 SG urinary strip with 10 parameters was performed in all patients for the assessment of renal abnormalities. The data was collected on a fact sheet. Study variables were: age, sex, comorbidities (HTA, Diabetes, Obesity), hepatitis B and hepatitis C serologies, CD4 count, lipid balance (total cholesterol, LDL, HDL, triglycerides) creatinemia, filtration rate MDRD (MDRD-DFG) [4]:

Women - MDRD (mL/min/1.73 m2)

186 x (CS) -1,154 x (age) -0.203 x (0.742) x (1,212 if African origin)

Men - MDRD (mL/min/1.73 m2)

186 x (CS) -1,154 x (age) -0.203 x (1,212 if African origin)

Figure 1. Methods for calculating glomerular filtration flow (DFG): modification of Diet in Renal Disease equation (MDRD-DFG).

Kidney abnormalities were defined by the existence of at least one of the following disturbances: clearance of creatinemia - 60ml/min and/or proteinuria and/or leukocyturia and/or hematuria greater than 2 crosses to the urinary strip. No imaging had been done. The data were captured and analyzed with the 2010 VERSION-INFO software.A univariate analysis followed by a multivariate analysis in logistic regression was performed using Pearson's correlation coefficient to determine the factors correlated to kidney disease. Variables significantly associated (p-0.20) with renal disease in univariate analysis were subsequently included for multivariate analysis. The significativity threshold was set at a p value of less than 0.05.

RESULTS AND DISCUSSION

A total of 304 patients were included. Of these, 76 patients had kidney abnormalities, or a frequency of 25%. They were 21 men and 55 women, or a sex ratio of 0.38.

The average age of patients with renal abnormalities was 44-1 .5 years with extremes ranging from 35-69 years, median was 46.9 years. Table I represents the age distribution of people living with HIV with kidney abnormalities.

High blood pressure was found in 34.89% (no. 26) and diabetes in 3.95% (no.3). Tobacco use was found in 13.16% (no.10) patients with kidney abnormality. Alcohol consumption was present in 7.89% (n-6) patients. Obesity was present in 8% (no.6) patients with kidney abnormalities. Among patients with renal abnormalities, 7.89% (n-6) had dyslipidemia, of which 2.63% (n-2) had type II hypercholesteria and 5.26% (n-4) had hypertriglyceridemia.

Proteinuria greater than 2 crosses in the urinary strip was found in 13.49% (n-40). Leukocyturia was present in 1.98% (n-6). Hematuria was found in 0.99% (no. 3) patients. According to the MDRD formula, kidney failure was diagnosed in 15.79% (n-48) patients or a DFG of 60 ml/min/1.73m2, among these patients 14.47% (n-44) patients were in stage 3.

In the population of patients with renal abnormalities 63.16% (n-48) patients had a CD4 count less than 200 cells/mm3.

HIV/HBV and HIV/HCV co-infection were present in 21.05% (n.28) patients and 3.61% (n-11) patients, respectively.

Kidney abnormalities were significantly associated with a CD4 count of less than 200 cells/mm3

(p-0.024).

DISCUSSION

Republic of Congo, kidney disease screening is not a priority in monitoring PHAs, unlike opportunistic infections. The frequency of kidney abnormalities in our ward is 25%. This prevalence is identical to that found in Côte d'Ivoire and Kenya, respectively 26% and 25% [5] . In Burkina Faso, Hema et al found a prevalence of 23%, similar to our prevalence [6]; Izzedin e.g. and al reported a 30% prevalence of kidney abnormalities [7]. Comparing our results with these studies is difficult given the operational definition of kidney abnormalities. The various abnormalities in the urinary strip have not been confirmed by biology.

In our study, the average age of individuals with kidney disease was 44-1.5 years. Longo et al in the DRC found a similar result [8]. We found a female predominance in our series with a sex ratio of 0.3. This could be explained by the female predominance of the world's population and the socio-economic vulnerability of women making it difficult to access care and medicines in developing countries. Proteinuria is present in 13.49% of patients. Ramezani et al in Iran report a similar result [9]. Our results were lower than most African studies, Kaze in Cameroon which found 36% of patients with proteinuria, Longo found a proteinuria of 20.5% [10.8]. The difference could be explained by the definition of proteinuria in our study; we only took into account proteinuria greater than or equal to 2 crosses in the urinary strip.

Leukocyturia was present in 1.98% of PHAs. Leukocyturia is difficult to interpret because it can be a mere infection. Therefore the study of urinary sediment would have been necessary for the evaluation of leukocyturia.

The incidence of PHAs with DFG of 60ml/min/1.73m2 was 15.79%, Ekat et al had observed a prevalence of kidney failure in newly detected HIV subjects at 8.5% [11] . Our result is higher than those of Ekat et al, this difference could be explained by the systematatization of the realization of

creatininemia in the follow-up and inclusion of antiretroviral treatment in our study.

In our study, renal abnormalities were correlated with cD4 counts of less than 200 cells/mm3 (P-0.024). Longo et al in the Republic of Congo and Kaze in Cameroon also showed a strong correlation between the occurrence of kidney disease and cD4 counts below 200 cells/mm3 [8,10]. CD4 counts of less than 200 cells/min are a risk factor for developing kidney disease. Indeed, during HIV, there is severe immunosuppression which is responsible for interstitial inflammatory infiltration responsible for immune dysregulation.

Our work has some limitations, in fact, the lack of realization of urinary sediment, quantification of proteinuria and morphological examinations make it difficult to interpret our results.

Table I: Age Distribution of People Living with HIV With Kidney Abnormalities

Age (years)	n	%
<20	0	0
[20-30[	2	2,6
[30-40[	14	18,4
[40-50[	32	42,1
[50-60[	20	26,3
[60-70[	8	10,5
≥70	0	0
Total	76	100

Table II: Correlation between kidney abnormalities and CD4 levels

CD4 (cell /mm3)	PvVIH with kidney abnormalities	PvVIH no kidney abnormalities	OR	IC95%	P
<200	48	123	1,4	1,8 – 2,4	0,024
[200-350[	20	69	0,8	0,4 -1,4	0,49
[350-500[	7	21	1	0,4 - 2,3	1
>500	1	15	0,1	00,2 – 1,4	0,07

CONCLUSION:

The results of our study show that the frequency of renal abnormalities is high in PHAs, with cD4 counts below 200 cells/mm3. The screening of kidney abnormalities by the urinary strip is a useful way to avoid the installation of serious lesions complicating the management of patients living with HIV infection and should be a routine examination in the follow-up of this population.

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